

**Listing of Claims:**

1. (Previously Presented) An anticorrosion coating composition of metallic parts based on particulate metal in aqueous dispersion comprising, in the following proportions (percentages by weight):

at least one of an organic titanate and an organic zirconate in an amount from 0.3 to 24%;

a particulate metal or a mixture of particulate metals in an amount from 10 to 40%;

a silane-based binder in an amount from 1 to 25%; and

water in an amount sufficient to produce 100%;

wherein the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%.

2. (Previously Presented) The composition according to claim 1, wherein (i) the organic titanate is selected from the group consisting of titanates compatible in organic phase, titanates compatible in aqueous phase, and combinations thereof, and (ii) the organic zirconate is selected from the group consisting of zirconates compatible in organic phase, zirconates compatible in aqueous phase, and combinations thereof.

3. (Previously Presented) The composition according to claim 2, wherein the titanates compatible in organic phase are C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanates, and the zirconates compatible in organic phase are C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconates.

4. (Previously Presented) The composition according to claim 2, wherein the titanates compatible in aqueous phase are chelated organic titanates, and the zirconates compatible in aqueous phase are chelated organic zirconates.

5. (Previously Presented) The composition according to claim 1 wherein the particulate metal is selected from the group consisting of zinc, aluminium, zinc alloys, aluminium alloys, zinc and aluminium alloys, and combinations thereof.

6. (Previously Presented) The composition according to claim 1 wherein the silane-based binder comprises a silane having at least one hydrolysable hydroxyl function.

7. (Previously Presented) The composition according to claim 1 wherein the silane includes an epoxy function.

8. (Previously Presented) The composition according to claim 7, wherein the silane is selected from the group consisting of di- or trimethoxysilane with an epoxy function, di- or triethoxysilane with an epoxy function, and mixtures thereof.

9. (Previously Presented) The composition according to claim 1, further comprising 1 to 30% by weight of organic solvent or a mixture of organic solvents, with respect to the total weight of the composition.

10. (Previously Presented) The composition according to claim 9, wherein the organic solvent is selected from the group consisting of glycolic solvents, nitropropane, alcohols, ketones, white spirit, and mixtures thereof.

11. (Previously Presented) The composition according to claim 1 further comprising 0.1 to 7% by weight of molybdenum oxide, with respect to the total weight of the composition.

12. (Previously Presented) The composition according claim 1 further comprising 0.5 to 10% by weight, with respect to the total weight of the composition, of an anticorrosion reinforcing agent selected from the group consisting of yttrium, zirconium, lanthanum, cerium, praseodymium, in the form of oxides or of salts thereof.

13. (Previously Presented) The composition according to claim 1 further comprising at least one of a thickening agent and a wetting agent.

14. (Previously Presented) A method for forming an anticorrosion coating of metallic parts, the method comprising:

obtaining a coating comprising, in the following proportions (percentages by weight): at least one of an organic titanate and an organic zirconate in an amount from 0.3 to 24%, a particulate metal or a mixture of particulate metals in an amount from 10 to 40%, a silane-based binder in an amount from 1 to 25%, and water in an amount sufficient to produce 100%, wherein the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%;

forming a coating layer by spraying, soaking-draining or soaking-centrifugation;  
and

subjecting the coating layer to a baking operation by supply of thermal energy to thereby form the anticorrosion coating.

15. (Previously Presented) The method according to claim 14, prior to the baking operation, the coated metallic parts are subjected to a drying operation by supply of thermal energy.

16. (Previously Presented) The method according to claim 14, wherein the anticorrosion coating has a thickness of the dry film of between  $3\text{ }\mu\text{m}$  ( $11\text{g/m}^2$ ) and  $30\text{ }\mu\text{m}$  ( $110\text{ g/m}^2$ ).

17. (Previously Presented) A coated metallic substrate comprising an anticorrosion coating formed from a coating composition including in the following proportions (percentages by weight): at least one of an organic titanate and an organic zirconate in an amount from 0.3 to 24%, a particulate metal or a mixture of particulate

metals in an amount from 10 to 40%, a silane-based binder in an amount from 1 to 25%, and water in an amount sufficient to produce 100%, wherein the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%.

18. (Previously Presented) An aqueous composition of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate, adapted for use in a coating composition for a metallic substrate in aqueous dispersion, in the following proportions (percentages by weight):

water-soluble organic solvent in an amount from 0 to 20%.

silane-based binder in an amount from 20 to 50%, the silane having at least one hydrolysable hydroxyl function;

at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25%, compatible in organic phase; and

water in an amount sufficient to produce 100%.

19. (Previously Presented) The composition according to claim 18, wherein the water-soluble organic solvent is selected from the group consisting of glycolic solvents, alcohols, ketones, and mixtures thereof.

20. (Previously Presented) The composition according to claim 18 wherein the hydrolysable hydroxyl function is a C<sub>1</sub>-C<sub>4</sub> alkoxy radical.

21. (Previously Presented) The composition according to claim 18 wherein the silane includes an epoxy function.

22. (Previously Presented) The composition according to claim 21, wherein the silane is selected from the group consisting of di- or trimethoxysilane with an epoxy function, di- or triethoxysilane with an epoxy function, and mixtures thereof.

23. (Previously Presented) The composition according to claim 18 wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate is selected from the group consisting of tetraethyl titanate, tetra-n-butyl titanate, octylene glycol titanate and mixtures thereof.

24. (Cancelled)

25. (Previously Presented) The composition according to claim 3 wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanates are selected from the group consisting of tetraethyl titanate, tetra-n-butyl titanate, octylene glycol titanate, and combinations thereof.

26. (Previously Presented) The composition according to claim 3 wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconates are selected from the group consisting of tetra-n-propyl zirconate, tetra-n-butyl zirconate, and combinations thereof.

27. (Previously Presented) The composition according to claim 4 wherein the chelated organic titanates are triethanolamine titanates.

28. (Previously Presented) The composition according to claim 4 wherein the chelated organic zirconates are triethanolamine zirconates.

29. (Previously Presented) The composition according to claim 5 wherein the alloys include metals selected from the group consisting of manganese, magnesium, tin, and combinations thereof.

30. (Previously Presented) The composition according to claim 5 wherein the alloys include a eutectic alloy of zinc and aluminium and a trace of rare earth elements.

31. (Previously Presented) The composition according to claim 6 wherein the hydrolysable hydroxyl function is a C<sub>1</sub>-C<sub>4</sub> alkoxyl radical.

32. (Previously Presented) The composition according to claim 8 wherein the trimethoxysilane is selected from the group consisting of gamma-glycidoxypropyltrimethoxysilane, beta-(3,4-epoxycyclohexyl)ethyltrimethoxysilane, and mixtures thereof.

33. (Previously Presented) The composition according to claim 10 wherein the glycolic solvents are glycol ethers.

34. (Previously Presented) The composition according to claim 33 wherein the glycol ethers are selected from the group consisting of diethylene glycol, triethylene glycol, dipropylene glycol, propylene glycol methyl ether, and mixtures thereof.

35. (Previously Presented) The composition according to claim 10 wherein the glycolic solvents are selected from the group consisting of propylene glycol, polypropylene glycol, and mixtures thereof.

36. (Previously Presented) The composition according to claim 9 wherein the organic solvent is 2,2,4-trimethyl-1,3-pentanediol isobutyrate (texanol).

37. (Previously Presented) The composition according to claim 12 wherein the reinforcing agent is yttrium oxide  $Y_2O_3$ .

38. (Previously Presented) The composition according to claim 1 further comprising 0.2 to 4% by weight, with respect to the total weight of the composition, of a corrosion inhibitor pigment.

39. (Previously Presented) The composition according to claim 38 wherein the corrosion inhibitor pigment is aluminium triphosphate.



40. (Previously Presented) The composition according to claim 13 wherein the thickening agent is present in an amount of 0.005 to 7% by weight with respect to the total weight of the composition.

41. (Previously Presented) The composition according to claim 13 wherein the wetting agent is present in an amount of 0.1 to 4% by weight with respect to the total weight of the composition.

42. (Previously Presented) The method according to claim 14 wherein the baking operation by supply of thermal energy includes at least one of convection, infrared, and induction.

43. (Previously Presented) The method according to claim 14 wherein the baking operation is performed at a temperature between 180°C and 350°C.

44. (Previously Presented) The method according to claim 43 wherein the baking operation is performed for approximately 10 to 60 minutes by convection or infrared.

45. (Previously Presented) The method according to claim 43 wherein the baking operation is performed for 30 seconds to 5 minutes by induction.

46. (Previously Presented) The anticorrosion coating formed by the method according to claim 14.

47. (Previously Presented) The method according to claim 15 wherein the drying operation by supply of thermal energy includes at least one of convection, infrared, and induction.

48. (Previously Presented) The method according to claim 47 wherein the drying operation is performed at a temperature between 30°C and 250°C by convection.

49. (Previously Presented) The method according to claim 47 wherein the drying operation is performed for approximately 10 to 30 minutes on a line.

50. (Previously Presented) The method according to claim 47 wherein the drying operation is performed for 30 seconds to 5 minutes by induction.

51. (Previously Presented) The anticorrosion coating formed by the method according to claim 15.

52. (Previously Presented) The method according to claim 16 wherein the thickness is between 4  $\mu\text{m}$  (15  $\text{g/m}^2$ ) and 12  $\mu\text{m}$  (45  $\text{g/m}^2$ ).

53. (Previously Presented) The method according to claim 52 wherein the thickness is between 5  $\mu\text{m}$  (18  $\text{g/m}^2$ ) and 10  $\mu\text{m}$  (40  $\text{g/m}^2$ ).

54. (Previously Presented) The anticorrosion coating formed by the method of claim 16.

55. (Previously Presented) The method according to claim 15 wherein the anticorrosion coating has a thickness of the dry film of between 3  $\mu\text{m}$  (11  $\text{g/m}^2$ ) and 30  $\mu\text{m}$  (110  $\text{g/m}^2$ ).

56. (Previously Presented) The method according to claim 55 wherein the thickness is between 4  $\mu\text{m}$  (15  $\text{g/m}^2$ ) and 12  $\mu\text{m}$  (45  $\text{g/m}^2$ ).

57. (Previously Presented) The method according to claim 56 wherein the thickness is between 5  $\mu\text{m}$  (18  $\text{g/m}^2$ ) and 10  $\mu\text{m}$  (40  $\text{g/m}^2$ ).

58. (Previously Presented) The anticorrosion coating formed by the method of claim 55.

59. (Previously Presented) The metallic substrate of claim 17 wherein the metallic substrate is selected from the group consisting of steel, cast-iron, and aluminium.

60. (Previously Presented) The metallic substrate of claim 59 wherein the steel is zinc coated.

61. (Previously Presented) The composition of claim 19 wherein the glycolic solvents include glycol ethers.

62. (Previously Presented) The composition of claim 61 wherein the glycol ethers are selected from the group consisting of diethylene glycol, triethylene glycol, dipropylene glycol, and mixtures thereof.

63. (Previously Presented) The composition of claim 19 wherein the glycolic solvents include propylene glycol, propylene glycol methyl ether, and mixtures thereof.

64. (Previously Presented) The composition according to claim 19 wherein the hydrolysable hydroxyl function is a C<sub>1</sub>-C<sub>4</sub> alkoxyl radical.

65. (Previously Presented) The composition according to claim 22 wherein the trimethoxysilane is selected from the group consisting of gamma-glycidoxypropyltrimethoxysilane, beta-(3,4-epoxycyclohexyl)ethyltrimethoxysilane, and mixtures thereof.

66. (Previously Presented) The composition according to claim 18 wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconate is selected from the group consisting of tetra-n-propyl zirconate, tetra-n-butyl zirconate, and mixtures thereof.

67. (Previously Presented) A method for pretreating a substrate prior to receiving an adhesive or coating, the method comprising:

providing a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

applying a coating of the composition to the substrate, to thereby pretreat the substrate.

68. (Previously Presented) A method for sealing a substrate or coated substrate, the method comprising:

providing a substrate or coated substrate;

providing a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

applying a coating of the composition on the substrate, to thereby seal the substrate or coated substrate.

69. (Previously Presented) A method for passivating a substrate of steel, zinc, aluminium, or steel having a zinc-based coating, the method comprising:

providing a substrate selected from the group consisting of steel, zinc, aluminium, and steel having a zinc-based coating;

providing a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

applying a coating of the composition on the substrate, thereby passivating the substrate.

70. (Previously Presented) A method for improving the adhesion of coatings or adhesives in aqueous phase, the method comprising:

forming a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

adding the composition to a coating or adhesive to thereby improve the resulting  
adhesion of the coating or adhesive